

IN THE CLAIMS:

(Additions are represented by underlining and deletions are represented by both strikethroughs and double brackets.)

Please amend the claims as follows:

5 1. (Currently amended) A monitoring system comprising:

(a) A device for monitoring and reporting at least one parameter of an electric circuit, said device comprising:

10 (1) at least one sensor coupled with said electric circuit and operative to sense at least one electrical parameter in said electric circuit and generate at least one analog signal indicative thereof[[:]],

(2) an analog to digital converter coupled with said at least one sensor and operative to convert said at least one analog signal to at least one digital signal representative of said at least one analog signal[[:]],

15 (3) a processor coupled with said analog to digital converter and operative to generate at least one computed value from said at least one digital signal[[:]],

(4) a local display coupled with said processor and operative to report said at least one computed value, and[[:]]

20 (5) a communications port coupled with said processor and a digital network and operative to facilitate reporting of said at least one computed value onto said digital network; and

wherein the system further comprises:

25 (b) a summing module coupled with said digital network, said summing module operative to receive said at least one computed value from said digital network and further sum said at least one computed value to a second value.

2. (Currently amended) The ~~device~~ system of claim 1 further comprising a multiplexer coupled between said at least one sensor and said analog to digital converter.
3. (Currently amended) The ~~device~~ system of claim 1, wherein said analog to digital converter comprises first and second analog to digital converters, said first analog to digital converter being operative to convert a voltage analog signal to at least one digital sample and said second analog to digital converter being operative to convert a current analog signal to at least one digital sample.
4. (Currently amended) The ~~device~~ system of claim 1, wherein said local display is operative to display said at least one electrical parameter.
5. (Currently amended) The ~~device~~ system of claim 1, further comprising a time synchronization receiver, said processor operative to receive a first time synchronization signal from said time synchronization receiver and further operative to alter a timing clock signal based on said first time synchronization signal.
6. (Currently amended) The ~~device~~ system of claim 5 further comprising a local synchronization circuit, said local synchronization circuit operative to output said timing clock signal to said processor.
7. (Currently amended) The ~~device~~ system of claim 5, wherein said first time synchronization signal comprises a network time signal.
8. (Currently amended) The ~~device~~ system of claim 5, wherein said first time synchronization signal comprises a second time synchronization signal from a second device coupled with said digital network.
9. (Currently amended) The ~~device~~ system of claim 8, wherein said second time synchronization signal from said second device is transmitted to a plurality of devices coupled with said digital network.
10. (Currently amended) The ~~device~~ system of claim 5, wherein said time synchronization receiver comprises a GPS receiver wherein said GPS receiver is operative to receive a GPS signal.

11. (Currently amended) The ~~device~~ system of claim 10, wherein said GPS receiver wirelessly receives said GPS signal.
12. (Currently amended) The ~~device~~ system of claim 5, wherein said first time synchronization signal is computed from a fundamental line frequency computation of said electric circuit.
13. (Currently amended) The ~~device~~ system of claim 1 further comprising a remote module, said remote module operative to allow a second device to remotely connect to said device over said digital network.
14. (Currently amended) The ~~device~~ system of claim 13, wherein said second device comprises at least one computer.
15. (Currently amended) The ~~device~~ system of claim 13, wherein said second device comprises a meter.
16. (Currently amended) The ~~device~~ system of claim 13, wherein said second device comprises a protection device.
17. (Currently amended) The ~~device~~ system of claim 13, wherein said second device further comprises a second remote module, said second remote module operative to allow said device to remotely connect to a third device over the digital network.
18. (Currently amended) The ~~device~~ system of claim 13, wherein said second device comprises a circuit breaker, said circuit breaker comprising a second communications port coupled with said digital network.
19. (Currently amended) The ~~device~~ system of claim 1, wherein said digital network comprises an Ethernet network, said communications port comprising an Ethernet port.
20. (Currently amended) The ~~device~~ system of claim 1, wherein said digital network comprises a digital data transmission network.

21. (Currently amended) The ~~device~~ system of claim 1, wherein said digital network comprises a Transmission Control Protocol/Internet Protocol ("TCP/IP") communications network.
22. (Currently amended) The ~~device~~ system of claim 1, wherein said digital network
5 comprises a fiber optic data communications network.
23. (Currently amended) The ~~device~~ system of claim 1 further wherein said processor is operative to receive said at least one digital signal and provide digital data representative of said at least one electrical parameter.
24. (Currently amended) The ~~device~~ system of claim 23 further wherein said device is
10 operative to transmit said digital data onto said digital network.
25. (Currently amended) The ~~device~~ system of claim 23, wherein said digital data is transmitted in substantially real time.
26. (Currently amended) The ~~device~~ system of claim 1, said processor further comprising
15 an inverse current module, said inverse current module operative to determine a fault condition on said electric circuit.
27. (Currently amended) The ~~device~~ system of claim 26, wherein said fault condition is determined by calculating the square of the current multiplied by the duration as expressed by the equation I^2T .
28. (Currently amended) The ~~device~~ system of claim 1, wherein said device is further
20 coupled with at least a second electric circuit, said device operative to perform an overcurrent protection function.
29. (Currently amended) The ~~device~~ system of claim 1 further comprising at least one second communication port.
30. (Currently amended) The ~~device~~ system of claim 29, wherein said at least one second
25 communication port comprises an Ethernet port.
31. (Currently amended) The ~~device~~ system of claim 29, wherein said at least one second communication port is coupled with a second device.

32. (Currently amended) The ~~device~~ system of claim 1 further comprising a second communication port coupled with said digital network and a third communication port coupled with said digital network.
- 5 33. (Currently amended) The ~~device~~ system of claim 32, wherein said second communication port and said third communication port each comprise at least one RS232 port.
34. (Currently amended) The ~~device~~ system of claim 32, wherein said second communication port and said third communication port comprise at least one RS485 port.
- 10 35. (Currently amended) The ~~device~~ system of claim 32, wherein said second communication port comprises an RS232 port and said third communication port comprises a RS485 port.
- 15 36. (Currently amended) The ~~device~~ system of claim 1 wherein said communications port further is operative to scale said digital network for communications among a plurality of said device for monitoring and reporting at least one parameter of an electric circuit, without substantially degrading real time communications among any at least two of said device for monitoring and reporting at least one parameter of an electric circuit.
- 20 37. (Currently amended) The ~~device~~ system of claim 1, wherein said communications port enables centralized simultaneous knowledge of a status of a plurality of said device for monitoring and reporting at least one parameter of an electric circuit.
- 25 38. (Currently amended) The ~~device~~ system of claim 1, wherein said communications port enables substantially simultaneous real time reporting of said at least one computed value over said digital network from a plurality of said devices without any one of said plurality of devices waiting for another one of said plurality of devices
39. (Currently amended) The ~~device~~ system of claim 1, wherein said digital network comprises a wireless network.

40. (Currently Amended)The ~~device~~ system of claim 1, wherein said communication port is further operative to communicate with substantially simultaneous connections with a plurality of power monitoring devices over said digital network.

5 41. (Currently Amended)The ~~device~~ system of claim 1, wherein said summing module comprises a phasor summing module.

42. (Currently Amended)The ~~device~~ system of claim 1, wherein said summing module is coupled with said processor.

RESPONSE

This is a response to the Office Action dated August 12, 2004. Claims 1-42 are pending in the application. In the Office Action, the Examiner objected to various informalities and typographic errors in the specification. In addition, the Examiner objected to claim 38 under 37 C.F.R. § 1.75(a) for failing to particularly point out and distinctly claim the subject matter which the Applicant regards as the invention. Further, the Examiner rejected claims 36 and 38 under 35 U.S.C. § 112, first paragraph, for failing to comply with the written description requirement. Claims 1-42 were also rejected under 35 U.S.C. § 101 based on double patenting. The examiner rejected claims 1, 2, 4, 13-18, 20, 23-25, 29, 31-33, 36-38, 40 and 42 under 35 U.S.C. § 102(e) as being anticipated by U.S. Pat. No. 5,859,596 ("McRae"). Claims 3, 5-12, 19, 21, 22, 26-28, 30, 34, 35, 39 and 41 were rejected under 35 U.S.C. § 103(a) as being unpatentable over: McRae in view of U.S. Pat. No. 5,453,903 ("Chow"); McRae in view of "Global Positioning System Applications at the Bonneville Power Administration" ("Street"); McRae in view of Street and further in view of U.S. Pat. No. 5,809,045 ("Adamiak"); McRae in view of Applicant's Admissions of the prior art; McRae in view of U.S. Pat. No. 5,768,148 ("Murphy"); McRae in view of Multichannel Continuous Harmonic Analysis in Real-Time ("Miller"); McRae in view of U.S. Pat. No. 4,717,985 ("Demeyer"); McRae in view of U.S. Pat. No. 6,369,719 ("Tracy") or McRae in view of Adamiak.

The rejections from the Office Action of August 12, 2004 are discussed below in connection with the various claims. No new matter has been added. Reconsideration of the application is respectfully requested in light of the following remarks.

I. DRAWING OBJECTIONS

The Examiner objected to the drawings as containing various informalities. With this response, appropriate corrections have been made. No new matter has been added. In particular, the following corrections have been made:

1. On page 7, paragraph 0059 of the detailed description has been modified to state: "The electricity distribution system 10 represents a distribution system that may be

used in factories or utilities, or in industrial, commercial, manufacturing and/or institutional uses.” This eliminates the confusion about whether the electricity distribution system 10 in the drawings was prior art. The electricity distribution system 10 is not known in the prior art, but rather is an aspect of the environment in which the invention is used. Figure 1

5 discloses elements not in the prior art, so it would be improper to label Figure 1 as prior art.

2. Figures 1-30b have been amended to be properly identified as “Replacement Sheet” on the top margin of each Figure.

10 II. SPECIFICATION OBJECTIONS

The Examiner objected to the specification as containing various informalities and typographic errors. With this response, a substitute specification has been provided which corrects all of the errors noted by the Examiner. No new matter has been added. A marked up version of the substitute specification has also been provided showing the changes made except it does not detail the formatting changes and font changes made to the tables.

15 On page 1, the Examiner has objected to the incorporation by reference of 08/798,724, now U.S. Pat. No. 5,995,911, by U.S. application serial no. 08/798,723. The current application is a divisional of Application Serial no. 10/068,431, now U.S. Pat. No. 6,694,270, therefore, the current application explicitly incorporates the subject matter of its parent. The parent (now U.S. Pat. No. 6,694,270) was amended to explicitly incorporate all
20 the text of 08/798,724, now U.S. Pat. No. 5,995,911. Accordingly, Applicant believes that all essential material has been explicitly incorporated in compliance with M.P.E.P. § 608.01(p)(I).

In particular, the following corrections have been made:

1. On the cover page, the reference number for the assignee (“PML Ref. No.
25 300108”) has been added underneath the reference number of the attorney for Applicant;
2. On page 1, the Related Applications section has been updated;
3. On page 1, paragraph 0001, line 7, the patent application identified as serial no. “08/798,923” has been corrected to “08/798,723”;

4. On page 7, paragraph 0058, and page 26, paragraph 00132, references to Figures 31-46 have been corrected to properly reference Figures 31a-46i;
5. On page 13, paragraph 0076, "FDDI" has been changed to "fiber distributed data interface (FDDI)." It is well known that the acronym FDDI stands for
5 fiber distributed data interface;
6. On page 26, paragraph 00132, "embodiments" has been corrected to "embodiment";
7. The tables on pages 28-44, 47-57 and 60 have been modified by increasing the size of the lettering and increasing the bottom margin; and
- 10 8. On page 83, the Abstract has been rewritten in under 150 words.

Accordingly, Applicants respectfully request that the Examiner withdraw these objections to the Specification.

III. REJECTIONS UNDER 37 C.F.R. § 1.75(a)

15 The Examiner objected to claim 38 under 37 C.F.R. § 1.75(a) for failing to particularly point out and distinctly claim the subject matter which the Applicant regards as the invention. With this response, claim 38 has been amended for clarity and not for reasons related to patentability.

Accordingly, Applicant respectfully requests that the Examiner withdraw this
20 objection to claim 38.

IV. REJECTIONS UNDER 35 U.S.C. § 112

The Examiner rejected claims 36 and 38 under 35 U.S.C. § 112, first paragraph for failing to comply with the written description requirement. The Examiner objects to the
25 negative limitation in claim 36 that states "...without substantially degrading real time communications among any at least two of said device for monitoring and reporting at least one parameter of an electric circuit." Applicant submits that claim 36 is adequately disclosed in the specification. Accordingly, Applicant respectfully requests that the Examiner withdraw the objections to claim 36.

The specification on page 12, paragraph 00073 states “[t]he data transmission network 60 provides real time data communication among the various components connected to the network.” Monitoring devices are components connected to the network and as such, they communicate in real time. The communications port is the connection to the network that enables real time communication. The objected claim language of claim 36 discloses the communication port’s connection to the digital network resulting in real time communication between various components such as “two of said device for monitoring and reporting at least one parameter of an electric circuit.” Accordingly, the specification describes claim 36 in a way as to reasonably convey to one skilled in the relevant art that the inventor had possession of the claimed invention.

The Examiner objects to the negative limitation in claim 38 that states “...without any one of said plurality of devices waiting for another of said plurality of devices.” Applicant submits that claim 38 is adequately disclosed in the specification. Accordingly, Applicant respectfully requests that the Examiner withdraw the objections to claim 38.

As stated above, that the communications between components connected to the network communicate in real time is supported by the specification. Real time communication between the monitoring devices is by definition simultaneous communication. The simultaneous or real time communication of devices means that individual monitoring devices do not “wait” on any one of the plurality of other devices or else the communication would not be in real time. The specification on page 12, paragraph 00073 states “[t]he data transmission network 60 provides real time data communication among the various components connected to the network.” This establishes real time communication between devices and supports the limitation in claim 38. Accordingly, the specification describes claim 38 in a way as to reasonably convey to one skilled in the relevant art that the inventor had possession of the claimed invention.

Applicant respectfully requests that the Examiner withdraw these objections to claims 36 and 38.

V. DOUBLE PATENTING REJECTION

The Examiner rejected claims 1-42 under 35 U.S.C. § 101, as claiming the same invention as that of claims 1-42 of co-pending Application No. 10/613,701 (The '701 App.).

5 The wrong claims were entered in the '701 App. The '701 Application's claims were confused by the PTO with the claims of this Application. Because the wrong claims for the '701 App. were entered, the '701 App. will be amended with the claims originally filed therewith by the Applicant.

Accordingly, Applicant respectfully requests that the Examiner withdraw this
10 objection to claims 1-42.

VI. REJECTIONS UNDER 35 U.S.C. § 102

Independent claim 1 was rejected under 35 U.S.C. § 102(e) as being anticipated by McRae. Applicant submits that McRae does not anticipate claim 1 for the reasons that
15 McRae is not prior art and further does not disclose all of the elements of claim 1.

This application is a divisional of U.S. Pat. No. 6,694,270, which claims priority to U.S. Pat. No. 5,650,936, filed on December 30, 1994. Therefore, this application claims priority to December 30, 1994. As McRae was filed August 30, 1996 and issued January 12, 1999, Applicant submits that it is not prior art under 35 U.S.C. § 102.

20 Claim 1 relates to "a device for monitoring and reporting at least one parameter of an electric circuit." "A sensor coupled with said electric circuit" senses "at least one electrical parameter in said electric circuit and generate[s] at least one analog signal indicative thereof." "An analog to digital converter" operates "to convert at least one analog signal to at least one digital signal." "A processor coupled with said analog to digital convertor"
25 generates "at least one computed value from said at least one digital signal." "A local display coupled with said processor" reports "said at least one computed value." "A communications port coupled with said processor and a digital network" allows "reporting of said at least one computed value onto said digital network." Finally, "a summing module coupled with said digital network" receives "said at least one computed value from said

digital network and further sum[s] said at least on computed value to compute a second value.”

McRae discloses “a plurality of monitoring devices...connected to respective pieces of switchyard equipment and associated with a common communications network. A remote host computer is connected to the network to bidirectionally communicate with each monitoring device. The communications network is the existing power line used for delivering power and control signals to the switchyard equipment. Each monitoring device includes testing and/or monitoring circuitry for testing and/or monitoring one or more conditions of the piece of switchyard equipment and generating condition data therefrom, a storage device for storing the generated data, and a transmitter adapted to transmit the data to the remote location via the power line. The remote host computer receives the data transmitted to the remote location and stores the received data therein in a database format. The monitoring device can request previously sent data from the remote host computer. The monitoring includes an RS-232 port for accepting a local computer which conducts tests of the switchyard equipment, analyzes the results, compares the results with previous tests, and reprograms alarm parameters and baseline values associated with the switchyard equipment.”

McRae, Abstract.

McRae fails to disclose a summing module coupled with a digital network operative to receive at least one computed value and compute said computed value to a second value as claimed in claim 1. McRae discloses “a monitoring device that computes and stores averaged values of temperature and pressure, and the accumulated amp-hours for each phase...” McRae, col. 11 lines 57-60. The monitoring device can receive and compute values. However, McRae does not disclose a summing module coupled to a digital network where the network is coupled to the processor of the monitoring devices as in claim 1.

McRae merely discloses that the monitoring devices are themselves coupled to a communications network and those monitoring devices receive and compute values. See McRae, Abstract. Claim 1 not only includes monitoring devices coupled to a network, but also a summing module coupled to the network where the summing module receives a computed value from the digital network and further computes at least one second value.

For at least these reasons, McRae does not anticipate independent claim 1.
Accordingly, Applicant requests that the Examiner withdraw this rejection of Claim 1.

Dependent claims 2, 4, 13-18, 20, 23-25, 29, 31-33, 36-38, 40 and 42 were also rejected pursuant to 35 U.S.C. § 102(e) as being anticipated by McRae. Dependent claims 2,
5 4, 13-18, 20, 23-25, 29, 31-33, 36-38, 40 and 42 should be allowed for the reasons set out above for the independent claims. Applicant therefore requests that the Examiner withdraw this rejection of these claims.

VII. REJECTIONS UNDER 35 U.S.C. § 103(a)

A. McRae in view of Chow, Street or Street further in view of Adamiak

10 Dependent claims 3 and 5-12 were rejected under 35 U.S.C. § 103(a) as being unpatentable over McRae in view of Chow, Street or Street, further in view of Adamiak. These claims should be allowed for the reasons set forth above for the independent claim. McRae, Chow, Street or Adamiak do not disclose all of the limitations of the independent
15 claim from which claims 3 and 5-12 depend. In particular, McRae fails to disclose a summing module coupled to said digital network for receiving at least one computed value and for computing at least one second value. McRae fails to disclose a summing module connected to a digital network as in claim 1 and neither Chow, Street nor Adamiak disclose such a summing module. Accordingly, Applicants request that the Examiner withdraw these
20 rejections of dependent claims 3 and 5-12.

B. McRae in view of Applicant's Admissions of prior art

25 Dependent claims 19, 30, 34 and 35 were rejected under 35 U.S.C. § 103(a) as being unpatentable over McRae in view of Applicant's admissions of the prior art. These claims should be allowed for the reasons set forth above for the independent claim. McRae or the Applicant's admissions of prior art do not disclose all of the limitations of the independent claim from which claims 21, 22 or 26-28 depend. In particular, McRae fails to disclose a summing module coupled to said digital network for receiving at least one computed value and for computing at least one second value. McRae fails to disclose a summing module
30 connected to a digital network as in claim 1 and Applicant's Admissions of the prior art do

not disclose such a summing module. Applicant admits that an Ethernet port or other industry standard communication ports are prior art, however, the use of an Ethernet port or other industry standard communication ports with the embodiment of claim 1 is not obvious to one of skill in the art. The embodiment of claim 1 includes a digital network coupled to the processor of a monitoring device. There was no motivation in the prior art to combine the use of an Ethernet port or other industry standard communications port as in claims 19, 30, 34 and 35, with the monitoring device of claim 1. Accordingly, Applicants request that the Examiner withdraw these rejections of dependent claims 19, 30, 34 and 35.

C. McRae in view of Murphy, Miller or Demeyer

Dependent claims 21, 22 or 26-28 were rejected under 35 U.S.C. § 103(a) as being unpatentable over McRae in view of Murphy, Miller or Demeyer. These claims should be allowed for the reasons set forth above for the independent claim. McRae, Murphy, Miller or Demeyer do not disclose all of the limitations of the independent claim from which claims 21, 22 or 26-28 depend. In particular, McRae fails to disclose a summing module coupled to said digital network for receiving at least one computed value and for computing at least one second value. McRae fails to disclose a summing module connected to a digital network as in claim 1 and neither Murphy, Miller nor Demeyer disclose such a summing module. Accordingly, Applicants request that the Examiner withdraw these rejections of dependent claims 21, 22 and 26-28.

D. McRae in view of Tracy

Dependent claim 39 was rejected under 35 U.S.C. § 103(a) as being unpatentable over McRae in view of Tracy. This claim should be allowed for the reasons set forth above for the independent claim. McRae and Tracy do not disclose all of the limitations of the independent claim from which claim 39 depends. In particular, McRae fails to disclose a summing module coupled to said digital network for receiving at least one computed value and for computing at least one second value. McRae fails to disclose a summing module connected to a digital network as in claim 1 and Tracy does not disclose such a summing module. Claim 1 does include a digital network coupled to the processor of a monitoring

device. There was no motivation in the prior art to combine the use of wireless network as in claim 39 with the monitoring device of claim 1. Accordingly, Applicants request that the Examiner withdraw these rejections of dependent claim 39.

5 **E. McRae in view of Adamiak**

Dependent claim 41 was rejected under 35 U.S.C. § 103(a) as being unpatentable over McRae in view of Murphy, Miller or Demeyer. This claim should be allowed for the reasons set forth above for the independent claim. McRae and Adamiak do not disclose all of the limitations of the independent claim from which claim 41 depends. In particular, McRae
10 fails to disclose a summing module coupled to said digital network for receiving at least one computed value and for computing at least one second value. McRae fails to disclose a summing module connected to a digital network as in claim 1 and Adamiak does not disclose such a summing module. Accordingly, Applicants request that the Examiner withdraw these rejections of dependent claim 41.